Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of the Claims

Claims 2-19, 22, and 24 (original)

Claims 20, 26-42, 44-62, 64, 66, and 68-84 (previously presented)

Claim 1, 21, 23, 25, 43, 63, 65, 67 (currently amended)

1. (currently amended) A device for delivering an aerosolized compound, the device comprising:

a reservoir that stores the compound;

a system comprising an entry port and an element to generate particles of a desired size for physical ejection through one or more apertures from an ejection head of the element, wherein said particles comprise a compound, and wherein said system is fluidly connected to a reservoir; and

a housing comprising an inlet and an outlet between which is formed an airflow path wherein the inlet is directly behind the reservoir and in which at least the ejection head is disposed in the air flow path downstream of the inlet and upstream from the outlet, wherein the housing provides for a substantially unobstructed airflow between the ejection head and the outlet when air traverses the airflow path from the inlet to the outlet.

2. (original) A device according to claim 1 wherein the compound is stored in the reservoir in a liquid formulation.

3. (original) A device according to claim 1 wherein the compound is a pharmaceutical compound.

4. (original) A device according to claim 3 wherein the pharmaceutical compound is selected from the group consisting of a protein, a small molecule, and a gene delivery vehicle.

5. (original) A device according to claim 3 wherein the pharmaceutical compound is a protein selected from the group consisting of a hormone, a receptor, an antibody, and an enzyme.

6. (original) A device according to claim 3 wherein the pharmaceutical compound is a small molecule drug or prodrug.

7. (original) A device according to claim 3 wherein the pharmaceutical compound is a gene delivery vehicle.

8. (original) A device according to claim 1 wherein the reservoir and particle-generating system are disposed within the housing.

9. (original) A device according to claim 8 wherein the reservoir is aerodynamically shaped.

10. (original) A device according to claim 1 wherein the reservoir is detachable.

11. (original) A device according to claim 1 wherein the reservoir and particle-generating system are integrated into a single detachable unit.

12. (original) A device according to claim 1 wherein the particle-generating system is an electronic ejection device.

13. (original) A device according to claim 12 wherein the electronic ejection device uses heat to generate particles ejected from the ejection head.

14. (original) A device according to claim 12 wherein the electronic ejection device uses a piezoelectric component to generate particles ejected from the ejection head.

15. (original) A device according to claim 1 wherein the desired size of the particles is a size that allows the particles to transit to and be deposited in alveoli.

16. (original) A device according to claim 15 wherein at least about 90% of the particles range in size from about 1 μm to about 5 μm.

17. (original) A device according to claim 16 wherein at least about 60% of the particles have a mass median aerodynamic diameter of about 3 μm.

18. (original) A device according to claim 1 wherein the substantially unobstructed airflow is substantially laminar prior to exiting the housing outlet.

19. (original) A device according to claim 1 wherein the substantially unobstructed airflow comprises a substantially homogeneous mixture of the ejected compound and air in the airflow prior to exiting the housing outlet.

20. (previously presented) A device according to claim 1 wherein an inner surface of the housing, ~~is~~ proximal to the ejection head and extending to the outlet, is contoured to minimize turbulence.

21. (currently amended) A method of delivering an aerosolized compound to a patient, the method comprising inhaling air which contains a compound through a device while the particle-generating system of the device is actuated, wherein said device comprises:

a reservoir that stores the compound;

a system comprising an entry port and an element to generate particles of a desired size for physical ejection through one or more apertures from an ejection head of the element, wherein said particles comprise the compound, wherein said system is fluidly connected to a reservoir; and

a housing comprising an inlet and an outlet between which is formed an airflow path wherein the inlet is directly behind the reservoir and in which at least the ejection head is disposed in the air flow path downstream of the inlet and upstream from the outlet, wherein the housing provides for substantially unobstructed air flow between the ejection head and the outlet when air traverses the air flow path from the inlet to the outlet.

22. (original) A method for generating an air stream comprising a compound according to claim 21, wherein the air is drawn from inlet to outlet.

23. (currently amended) A device for delivering an aerosolized compound, the device comprising:

a system that generates particles of a desired size that comprise a compound, wherein the system is fluidly connected to a reservoir, wherein the system comprises an entry port and an element to generate particles of the desired size for physical ejection through one or more apertures from an ejection head of the element; and

a housing comprising an inlet and an outlet between which is formed an airflow path wherein the inlet is directly behind the reservoir and in which at least the ejection head is disposed in the air flow path downstream of the inlet and upstream from the outlet, wherein the housing provides for substantially non-turbulent air flow between the ejection head and the outlet when air traverses the air flow path from inlet to outlet.

24. (original) A device for delivering an aerosolized compound, according to claim 23, wherein the housing provides for substantially laminar airflow between the ejection head and outlet when air traverses the airflow path from inlet to outlet.

25. (currently amended) An device for delivering an aerosolized compound, the device comprising:

a reservoir that stores the compound;

a particle-generating system comprising an entry port and an element to generate particles of a desired size for digitally controlled electronic ejection through one or more apertures from an ejection head of the element, wherein said particles comprise a compound, and wherein said system is fluidly connected to a reservoir; and

a housing comprising an inlet and an outlet between which is formed an airflow path wherein the inlet is directly behind the reservoir and in which at least the ejection head is disposed in the air flow path downstream of the inlet and upstream from the outlet, wherein the housing provides for a substantially unobstructed air flow between the ejection head and the outlet when air traverses the air flow path from the inlet to the outlet.

26. (previously presented) A device according to claim 25 wherein the substantially unobstructed airflow is substantially laminar prior to exiting the housing outlet.

27. (previously presented) A device according to claim 25 wherein the compound is stored in the reservoir in a liquid formulation.

28. (previously presented) A device according to claim 25 wherein the compound is a pharmaceutical compound.

29. (previously presented) A device according to claim 28 wherein the pharmaceutical compound is selected from the group consisting of a protein, a small molecule, and a gene delivery vehicle.

30. (previously presented) A device according to claim 28 wherein the pharmaceutical compound is a protein selected from the group consisting of a hormone, a receptor, an antibody, and an enzyme.

31. (previously presented) A device according to claim 28 wherein the pharmaceutical compound is a small molecule drug or prodrug.

32. (previously presented) A device according to claim 28 wherein the pharmaceutical compound is a gene delivery vehicle.

33. (previously presented) A device according to claim 25 wherein the reservoir and particle-generating system are disposed within the housing.

34. (previously presented) A device according to claim 25 wherein the reservoir is detachable.

35. (previously presented) A device according to claim 25 wherein the reservoir and particle-generating system are integrated into a single detachable unit.

36. (previously presented) A device according to claim 25 wherein the particle-generating system uses heat to generate particles electronically ejected from the ejection head.

37. (previously presented) A device according to claim 25 wherein the particle-generating system uses a piezoelectric component to generate particles electronically ejected from the ejection head.

38. (previously presented) A device according to claim 25 wherein the desired size of the particles is a size that allows the particles to transit to and be deposited in alveoli.

39. (previously presented) A device according to claim 25 wherein the digitally controlled electronic ejection from the particle-generating system is configured to produce particles substantially uniform in size.

40. (previously presented) A device according to claim 25 wherein at least about 90% of the particles have a diameter in the range of about 1 μm to about 5 μm.

41. (previously presented) A device according to claim 25 wherein at least about 60% of the particles have a mass median aerodynamic diameter of about 3 μm.

42. (previously presented) A device according to claim 25 wherein the substantially unobstructed airflow comprises a substantially homogeneous mixture of the ejected compound and air in the airflow prior to exiting the housing outlet.

43. (currently amended) A device for delivering an aerosolized compound, the device comprising:

a reservoir that stores the compound;

a system comprising an entry port and an element to generate particles of a desired size for physical ejection through one or more apertures from an ejection head of the element, wherein said particles comprise a compound, and wherein said system is fluidly connected to a reservoir; and

a housing comprising an inlet and an outlet between which is formed an airflow path wherein the inlet is directly behind the reservoir and in which at least the ejection head is disposed in the air flow path downstream of the inlet and upstream from the outlet, wherein the housing provides for a substantially unobstructed airflow between the inlet and the outlet when air traverses the air flow path from the inlet to the outlet.

44. (previously presented) A device according to claim 43 wherein the compound is stored in the reservoir in a liquid formulation.

45. (previously presented) A device according to claim 43 wherein the compound is a pharmaceutical compound.

46. (previously presented) A device according to claim 45 wherein the pharmaceutical compound is selected from the group consisting of a protein, a small molecule, and a gene delivery vehicle.

47. (previously presented) A device according to claim 45 wherein the pharmaceutical compound is a protein selected from the group consisting of a hormone, a receptor, an antibody, and an enzyme.

48. (previously presented) A device according to claim 45 wherein the pharmaceutical compound is a small molecule drug or prodrug.

49. (previously presented) A device according to claim 45 wherein the pharmaceutical compound is a gene delivery vehicle.

50. (previously presented) A device according to claim 43 wherein the reservoir and particle-generating system are disposed within the housing.

51. (previously presented) A device according to claim 50 wherein the reservoir is aerodynamically shaped.

52. (previously presented) A device according to claim 43 wherein the reservoir is detachable.

53. (previously presented) A device according to claim 43 wherein the reservoir and particle-generating system are integrated into a single detachable unit.

54. (previously presented) A device according to claim 43 wherein the particle-generating system is an electronic ejection device.

55. (previously presented) A device according to claim 54 wherein the electronic ejection device uses heat to generate particles ejected from the ejection head.

56. (previously presented) A device according to claim 54 wherein the electronic ejection device uses a piezoelectric component to generate particles ejected from the ejection head.

57. (previously presented) A device according to claim 43 wherein the desired size of the particles is a size that allows the particles to transit to and be deposited in alveoli.

58. (previously presented) A device according to claim 57 wherein at least about 90% of the particles range in size from about 1 μm to about 5 μm.

59. (previously presented) A device according to claim 58 wherein at least about 60% of the particles have a mass median aerodynamic diameter of about 3 μm.

60. (previously presented) A device according to claim 43 wherein the substantially unobstructed airflow is substantially laminar prior to exiting the housing outlet.

61. (previously presented) A device according to claim 43 wherein the substantially unobstructed airflow comprises a substantially homogeneous mixture of the ejected compound and air in the airflow prior to exiting the housing outlet.

62. (previously presented) A device according to claim 43 wherein an inner surface of the housing, proximal to the ejection head and extending to the outlet, is contoured to minimize turbulence.

63. (currently amended) A method of delivering an aerosolized compound to a patient, the method comprising inhaling air which contains a compound through a device while the particle-generating system of the device is actuated, wherein said device comprises:

a reservoir that stores the compound;

a system comprising an entry port and an element to generate particles of a desired size for physical ejection through one or more apertures from an ejection head of the element, wherein said particles comprise the compound, wherein said system is fluidly connected to a reservoir; and

a housing comprising an inlet and an outlet between which is formed an airflow path wherein the inlet is directly behind the reservoir and in which at least the ejection head is disposed in

the air flow path downstream of the inlet and upstream from the outlet, wherein the housing provides for a substantially unobstructed air flow between the inlet and the outlet when air traverses the air flow path from the inlet to the outlet.

64. (previously presented) A method for generating an air stream comprising a compound according to claim 63, wherein the air is drawn from inlet to outlet.

65. (currently amended) A device for delivering an aerosolized compound, the device comprising:

a system that generates particles of a desired size that comprise a compound, wherein the system is fluidly connected to a reservoir, wherein the system comprises an entry port and an element to generate particles of the desired size for physical ejection through one or more apertures from an ejection head of the element; and

a housing comprising an inlet and an outlet between which is formed an airflow path wherein the inlet is directly behind the reservoir and in which at least the ejection head is disposed in the air flow path downstream of the inlet and upstream from the outlet, wherein the housing provides for a substantially unobstructed air flow between the inlet and the outlet when air traverses the air flow path from the inlet to the outlet.

66. (previously presented) A device for delivering an aerosolized compound, according to claim 65, wherein the housing provides for substantially laminar airflow between the ejection head and outlet when air traverses the airflow path from inlet to outlet.

67. (currently amended) A device for delivering an aerosolized compound, the device comprising:

a reservoir that stores the compound;

a particle-generating system comprising an entry port and an element to generate particles of a desired size for digitally controlled electronic ejection through one or more apertures from an ejection head of the element, wherein said particles comprise a compound, and wherein said system is fluidly connected to a reservoir; and

a housing comprising an inlet and an outlet between which is formed an airflow path wherein the inlet is directly behind the reservoir and in which at least the ejection head is disposed in the air flow path downstream of the inlet and upstream from the outlet, wherein the housing provides for a substantially unobstructed air flow between the inlet and the outlet when air traverses the air flow path from the inlet to the outlet.

68. (previously presented) A device according to claim 67 wherein the substantially unobstructed airflow is substantially laminar prior to exiting the housing outlet.

69. (previously presented) A device according to claim 67 wherein the compound is stored in the reservoir in a liquid formulation.

70. (previously presented) A device according to claim 67 wherein the compound is a pharmaceutical compound.

71. (previously presented) A device according to claim 70 wherein the pharmaceutical compound is selected from the group consisting of a protein, a small molecule, and a gene delivery vehicle.

72. (previously presented) A device according to claim 70 wherein the pharmaceutical compound is a protein selected from the group consisting of a hormone, a receptor, an antibody, and an enzyme.

73. (previously presented) A device according to claim 70 wherein the pharmaceutical compound is a small molecule drug or prodrug.

74. (previously presented) A device according to claim 70 wherein the pharmaceutical compound is a gene delivery vehicle.

75. (previously presented) A device according to claim 67 wherein the reservoir and particle-generating system are disposed within the housing.

76. (previously presented) A device according to claim 67 wherein the reservoir is detachable.

77. (previously presented) A device according to claim 67 wherein the reservoir and particle-generating system are integrated into a single detachable unit.

78. (previously presented) A device according to claim 67 wherein the particle-generating system uses heat to generate particles electronically ejected from the ejection head.

79. (previously presented) A device according to claim 67 wherein the particle-generating system uses a piezoelectric component to generate particles electronically ejected from the ejection head.

80. (previously presented) A device according to claim 67 wherein the desired size of the particles is a size that allows the particles to transit to and be deposited in alveoli.

81. (previously presented) A device according to claim 67 wherein the digitally controlled electronic ejection from the particle-generating system is configured to produce particles substantially uniform in size.

82. (previously presented) A device according to claim 67 wherein at least about 90% of the particles have a diameter in the range of about 1 μm to about 5 μm.

83. (previously presented) A device according to claim 67 wherein at least about 60% of the particles have a mass median aerodynamic diameter of about 3 μm.

84. (previously presented) A device according to claim 67 wherein the substantially unobstructed airflow comprises a substantially homogeneous mixture of the ejected compound and air in the airflow prior to exiting the housing outlet.